

What is claimed is:

1. A receiver/transmitter circuit, comprising:
  - an antenna terminal;
  - a transmitter circuit which outputs a transmission signal in response to a transmit control signal;
  - a receiver circuit which receives a reception signal from the antenna terminal;
  - a waveform control circuit which outputs a switching signal having a gradual logic transition in response to the transmit control signal;
  - a first switch connected between the antenna terminal and the transmitter circuit, wherein the first switch transfers the transmission signal to the antenna terminal in response to the switching signal; and
  - a second switch connected between the antenna terminal and the receiver circuit.
2. The receiver/transmitter circuit according to claim 1, wherein the first switch includes a first transistor which has a first terminal connected to the antenna terminal, a second terminal connected to the transmitter circuit and a control terminal, and wherein said second switch includes a second transistor which has a first terminal connected to the antenna terminal, a second terminal connected to the receiver circuit and a control terminal.
3. The receiver/transmitter circuit according to claim 2, wherein the waveform control circuit includes a resistor and a capacitor, wherein a first end of the resistor is connected to the control terminal of the first transistor, and a second end of the resistor is connected to receive the transmit control signal,

and wherein the capacitor is connected between the first end of the resistor and a ground voltage node.

4. The receiver/transmitter circuit according to claim 2, wherein the waveform control circuit includes a first node, a current source circuit which outputs a set current to the first node in response to the transmit control signal, a ground voltage node and a capacitor connected between the first node and the ground voltage node.

5. The receiver/transmitter circuit according to claim 4, wherein the current source circuit includes:

a power voltage node and a ground voltage node;

a switch element operable in response to the transmit control signal;

a first current mirror circuit which is connected between the power voltage node and the ground voltage node, wherein the first current mirror circuit has a current input side connected to the power voltage node and a current output side connected to the first node; and

a second current mirror circuit operated in response to the transmit control signal, wherein the second current mirror circuit is connected to the power voltage node and wherein the second current mirror circuit has a current input side connected to the current output side of the first current mirror circuit and a current output side connected to the first node.

6. The receiver/transmitter circuit according to claim 1, further comprising a power amplifier which outputs the transmission signal in response to the transmit control signal.

7. A receiver/transmitter circuit, comprising:

an antenna terminal;

a transmitter circuit which outputs a transmission signal in response to a transmit control signal;

a receiver circuit which receives a reception signal from the antenna terminal;

a first switch connected between the antenna terminal and the transmitter circuit, wherein the first switch transfers the transmission signal to the antenna terminal in response to the transmit control signal;

a second switch connected between the antenna terminal and the receiver circuit;

a ground voltage node;

a resistor connected to the ground voltage node; and

a third switch which connects the transmitter circuit to the resistor in response to the transmit control signal.

8. The receiver/transmitter circuit according to the claim 7, wherein the first switch is turned on in response to a first logic level of the transmit control signal and is turned off in response to a second logic level of the transmit control signal, and wherein the second switch is turned off in response to the first logic level of the transmit control signal and is turned on in response to the second logic level of the transmit control signal.

9. The receiver/transmitter circuit according to the claim 7, wherein the third switch includes a transistor which has a first electrode connected to the resistor, a second electrode connected to the transmitter circuit and a control electrode which receives an inverted signal of the transmission signal.

10. The receiver/transmitter circuit according to the claim 7, wherein the transmitter circuit includes a power amplifier which outputs the transmission signal in response to transmit control signal.

11. A receiver/transmitter circuit, comprising:  
an antenna terminal;  
a transmitter circuit which outputs a transmission signal in response to a transmit control signal;  
a receiver circuit which receives a reception signal from the antenna terminal;  
a first switch connected between the antenna terminal and the transmitter circuit, wherein the first switch transfers the transmission signal to the antenna terminal in response to the transmit control signal;  
a second switch connected between the antenna terminal and the receiver circuit;  
a third switch which connects the output of the transmitter circuit to the input of the receiver circuit in response to the transmission signal.

12. The receiver/transmitter circuit according to the claim 11, wherein the first switch is turned on in response to a first logic level of the transmit control signal and is turned off in response to a second logic level of the transmit control signal, and wherein the second switch is turned off in response to the first logic level of the transmit control signal and is turned on in response to the second logic level of the transmit control signal.

13. The receiver/transmitter circuit according to the claim 11, wherein the third switch includes a transistor which has a first electrode connected to

the receiver circuit, a second electrode connected to the transmitter circuit and a control electrode which receives an inverted signal of the transmit control signal.

14. The receiver/transmitter circuit according to the claim 11, wherein the transmitter circuit includes a power amplifier which outputs the transmission signal in response to transmit control signal.

15. The receiver/transmitter circuit according to the claim 11, wherein the receiver circuit includes a low noise amplifier which is inputted with the receiving signal.

16. A receiver/transmitter circuit, comprising:  
an antenna terminal;  
a transmitter circuit which outputs a transmission signal in response to a transmit control signal;  
a phase locked loop circuit which outputs an oscillation signal to the transmitter circuit;  
a delay circuit which receives the transmit control signal and outputs a delayed transmit control signal as a switching signal;  
a receiver circuit which receives a reception signal from the antenna terminal;  
a first switch connected between the antenna terminal and the transmitter circuit, wherein the first switch transfers the transmission signal to the antenna terminal in response to the switching signal; and  
a second switch connected between the antenna terminal and the receiver circuit.

17. The receiver/transmitter circuit according to the claim 16, wherein the transmitter circuit is connected to the phase locked loop circuit and includes a power amplifier which outputs the transmission signal in response to the transmit control signal.